

# eBOX621-801-FL Series Embedded System User's Manual



#### **Disclaimers**

This manual has been carefully checked and believed to contain accurate information. Axiomtek Co., Ltd. assumes no responsibility for any infringements of patents or any third party's rights, and any liability arising from such use.

Axiomtek does not warrant or assume any legal liability or responsibility for the accuracy, completeness or usefulness of any information in this document. Axiomtek does not make any commitment to update the information in this manual.

Axiomtek reserves the right to change or revise this document and/or product at any time without notice

No part of this document may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording, or otherwise, without the prior written permission of Axiomtek Co., Ltd.

©Copyright 2012 Axiomtek Co., Ltd.
All Rights Reserved
July 2012, Version A1
Printed in Taiwan

## **Safety Precautions**

Before getting started, please read the following important safety precautions.

- 1. The eBOX621-801-FL does not come equipped with an operating system. An operating system must be loaded first before installing any software into the computer.
- 2. Be sure to ground yourself to prevent static charge when installing the internal components. Use a grounding wrist strap and place all electronic components in any static-shielded devices. Most electronic components are sensitive to static electrical charge.
- 3. Disconnect the power cord from the eBOX621-801-FL before making any installation. Be sure both the system and the external devices are turned OFF. Sudden surge of power could ruin sensitive components. Make sure the eBOX621-801-FL is properly grounded.
- 4. Make sure the voltage of the power source is correct before connecting the equipment to the power outlet.
- 5. Turn OFF the system power before cleaning. Clean the system using a cloth only. Do not spray any liquid cleaner directly onto the screen.
- 6. Do not leave this equipment in an uncontrolled environment where the storage temperature is below -20°C or above 80°C. It may damage the equipment.
- 7. Do not open the system's back cover. If opening the cover for maintenance is a must, only a trained technician is allowed to do so. Integrated circuits on computer boards are sensitive to static electricity. To avoid damaging chips from electrostatic discharge, observe the following precautions:
  - Before handling a board or integrated circuit, touch an unpainted portion of the system unit chassis for a few seconds. This will help to discharge any static electricity on your body.
  - When handling boards and components, wear a wrist-grounding strap, available from most electronic component stores.

## Classification

- 1. Degree of production against electric shock : not classified
- 2. Degree of protection against the ingress of water: IP40
- 3. Equipment not suitable for use in the presence of a flammable anesthetic mixture with air or with oxygen or nitrous oxide.
- 4. Mode of operation : Continuous

## **General Cleaning Tips**

You may need the following precautions before you begin to clean the computer. When you clean any single part or component for the computer, please read and understand the details below fully.

When you need to clean the device, please rub it with a piece of dry cloth.

- 1. Be cautious of the tiny removable components when you use a vacuum cleaner to absorb the dirt on the floor.
- 2. Turn the system off before you start to clean up the component or computer.
- 3. Never drop the components inside the computer or get circuit board damp or wet.
- 4. Be cautious of all kinds of cleaning solvents or chemicals when you use it for the sake of cleaning. Some individuals may be allergic to the ingredients.
- 5. Try not to put any food, drink or cigarette around the computer.

#### Cleaning Tools:

Although many companies have created products to help improve the process of cleaning your computer and peripherals users can also use household items to clean their computers and peripherals. Below is a listing of items you may need or want to use while cleaning your computer or computer peripherals.

Keep in mind that some components in your computer may only be able to be cleaned using a product designed for cleaning that component, if this is the case it will be mentioned in the cleaning.

- Cloth: A piece of cloth is the best tool to use when rubbing up a component. Although paper towels or tissues can be used on most hardware as well, we still recommend you to rub it with a piece of cloth.
- Water or rubbing alcohol: You may moisten a piece of cloth a bit with some water or rubbing alcohol and rub it on the computer. Unknown solvents may be harmful to the plastics parts.
- Vacuum cleaner: Absorb the dust, dirt, hair, cigarette particles, and other particles out of a computer can be one of the best methods of cleaning a computer. Over time these items can restrict the airflow in a computer and cause circuitry to corrode.
- Cotton swabs: Cotton swaps moistened with rubbing alcohol or water are excellent tools for wiping hard to reach areas in your keyboard, mouse, and other locations.
- Foam swabs: Whenever possible it is better to use lint free swabs such as foam swabs.

Note: We strongly recommended that you should shut down the system before you start to clean any single components.

#### Please follow the steps below:

- 1. Close all application programs
- 2. Close operating software
- 3. Turn off power switch
- 4. Remove all device
- 5. Pull out power cable

#### **Scrap Computer Recycling**

If the computer equipment's need the maintenance or are beyond repair, we strongly recommended that you should inform your Axiomtek distributor as soon as possible for the suitable solution. For the computers that are no longer useful or no longer working well, please contact your Axiomtek distributor for recycling and we will make the proper arrangement.

#### **Trademarks Acknowledgments**

Axiomtek is a trademark of Axiomtek Co., Ltd.

IBM, PC/AT, PS/2, VGA are trademarks of International Business Machines Corporation. Intel® and Pentium® are registered trademarks of Intel Corporation.

MS-DOS, Microsoft C and QuickBasic are trademarks of Microsoft Corporation.

Windows 7, Windows Vista, Windows XPE, Windows XP, Windows WinCE embedded, Linux, MS-DOS, Microsoft C and Other brand names and trademarks are the properties and registered brands of their respective owners.

## **Table of Contents**

	Disclaimers					
	Safety Pre	Safety Precautions				
	Classifica	tion	iv			
	General C	Cleaning Tips	V			
	Scrap Co	mputer Recycling	vi			
C۱	HAPTER 1	INTRODUCTION	1			
<u>٠</u> .	1.1	General Description				
	1.2	System Specifications				
	1.2.1	CPU				
	1.2.1	I/O System				
	1.2.3	System Specification				
	1.2.4	Driver CD Content				
	1.3	Dimensions				
	1.3.1	System Dimension				
	1.3.2	Wall mount Bracket Dimension				
	1.3.2	VESA Mount Bracket Dimension				
	1.4	I/O Outlets				
	1.5	Packing List				
	1.6	Model List				
CI		HARDWARE INSTALLATION				
	2.1	Installing the Memory Module				
	2.2	Installing the SATA HDD				
	2.3	Installing the CompactFlash				
	2.4	Installing the Express Mini Card				
	2.5	Installing the Wall Mount (Optional)				
	2.6	Installing the VESA Mount (optional)				
	2.7	Installing the Din-Rail Mount (optional)	33			
CI	HAPTER 3	Jumper Setting & Connector	37			
	3.1	SBC layout	38			
	3.2	Jumper Setting Summary	40			
	3.2.1	CompactFlash™ Voltage Jumper (JP3)	40			
	3.2.2	COM1 Mode Select Jumpers (JP4, JP5, JP6)	41			
	3.2.3	CMOS Clear Jumper (JP11)	41			
	3.2.4	Audio Output Jumper (JP13)	42			
	3.3	Connectors	43			
	3.3.1	Phoenix DC-in Connector	43			
	3.3.2	Serial Port Connector	44			
	3.3.3	VGA Connector				
	3.3.4	LAN Connector (LAN1, LAN2)	45			
	3.3.5	USB Connector	46			
	3.3.6	ATX Power On/OFF Button	46			
	3.3.7	Audio Connector	46			
	3.3.8	SATA Connector	47			
	3.3.9	SATA Power Connector	47			

(	3.3.10	CompactFlash™ Socket	48				
		DDR3 SODIMM Socket					
;	3.3.12	Express Mini Card Slot	50				
3.3.12 Express Mini Card Slot  CHAPTER 4 AMI BIOS SETUP UTILITY  4.1 Starting  4.2 Navigation Keys  4.3 Main Menu  4.4 Advanced Menu  4.5 Boot Menu							
4.1		Starting	54				
4.2		Navigation Keys	55				
4.3							
4.4							
4.5		Boot Menu	68				
4.6		Security Menu					
4.7		Chipset Menu	72				
4.8		Exit Menu					
APPENDIX A WATCHDOG TIMER							
	e e e						

# CHAPTER 1 INTRODUCTION

This chapter contains general information and detailed specifications of the eBOX621-801-FL. The Chapter 1 includes the following sections:

- General Description
- System Specification
- Dimensions
- I/O Outlets
- Packing List

#### 1.1 General Description

The eBOX621-801-FL is an embedded system that supports onboard dual core Intel® Atom™ processor D525 (1M Cache, 1.80 GHz) processors to provide Windows 7, Windows Vista, Windows XPE, Windows XP, Windows WinCE embedded, Linux, suitable for the most endurable operation. It features fan less design with full feature I/O, one 204-pin unbuffered SODIMM socket for singe channel DDR3-667/800 MHz memory, and enhanced system dependability by built-in Watchdog Timer.

#### Features

- 1. Intel® ICH8M chipset
- 2. Support Intel® Atom™ Processor D525 (1M Cache, 1.80 GHz)
- 3. Maximum to 4GB DDR3 667/800 MHz memory for D525
- 4. Ultra slim and compact design
- 5. Supports 4 USB 2.0 ports and 3 COM ports
- 6. Supports dual 10/100/1000Mbps Ethernet port
- 7. One 2.5" SATA HDD drive bay
- 8. One front access CompactFlash™
- 9. Watchdog timer
- 10. Wide Range DC-in support. (DC 9~34V)
- 11. Din-rail mount (optional)
- 12. Wall mount (optional)
- 13. VESA mount (optional)
- 14. Express Mini Card Module (optional)
- 15. USB WiFi Module (optional)
- 16. Antenna (optional)

#### Reliable and Stable Design

The eBOX621-801-FL adopts the advanced cooling system and supporting the CompactFlash™, which makes it especially suitable for vibration environments, best for industrial automation, digital signage and gaming application.

#### Embedded O.S. Supported

The eBOX621-801-FL not only supports Windows 7, Windows Vista, Windows XP, but also supports embedded OS, such as Windows XP embedded, WinCE and Linux.

#### Various Storage devices supported

For storage device, the eBOX621-801-FL supports one 2.5" SATA storage drive bay, and one CompactFlash $^{\text{TM}}$  type II slot.

## 1.2 System Specifications

#### 1.2.1 CPU

#### ■ CPU

Onboard Intel® Atom™ Processor D525 (1M Cache, 1.80 GHz)

#### ■ BIOS

AMI 8Mbit SPI Flash, DMI, Plug and Play

#### ■ System Memory

Maximum to 4GB DDR3 667/800 MHz memory for D525 One 204-pin unbuffered DDR3 SO-DIMM sockets with Raw Card-A or Raw Card-B format.

Support DDR3 SO-DIMM Module Configurations for each SO-DIMM

DIMM Capacity	DRAM Organization	# of Device
1GB	64Mb x 16	8
1GB	128Mb x 8	8
2GB	128Mb x 16	8
2GB	256Mb x 8	8
4GB	256Mb x 16	8
4GB	512Mb x 8	8



- 1. Raw Card-A = 2Ranks of x16 SDRAMs
- 2. Raw Card-B = 1Rank of x8 SDRAMs

#### 1.2.2 I/O System

- System I/O Outlet
- Two 9-pin D-Sub male connectors, COM1 for RS-232/422/485, COM2~COM3 for RS-232
- One 15-pin D-Sub female connector for VGA
- One Audio connector (Mic-IN, Line-OUT)
- Two RJ-45 connector for 10/100/1000Base-T Ethernet
- Four USB 2.0 connectors
- One phoenix type DC-in connector

#### 1.2.3 System Specification

#### ■ Watchdog Timer

Reset supported; 255 levels, 1~255 sec.

#### ■ Power Supply

9-34V wide range DC input

#### ■ Operation Temperature

-10°C ~ 55°C (14 °F ~ 130°F), D525 with W.T. HDD/SSD

#### **■** Storage Temperature

-20°C ~ 80°C (-4 °F ~ 176°F)

#### **■** Humidity

10% ~ 90% (non-condensation)

#### ■ Vibration Endurance

3Grm w/ CF(5-500Hz, X, Y, Z directions)

#### ■ Weight

1.8 kg (1.1 lb) without package

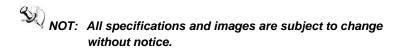
2.6 kg (17.64 lb) with package

#### **■** Dimensions

200mm(7.87") (W) x 120mm(4.72") (D) x 56mm(2.2") (H)

#### 1.2.4 Driver CD Content

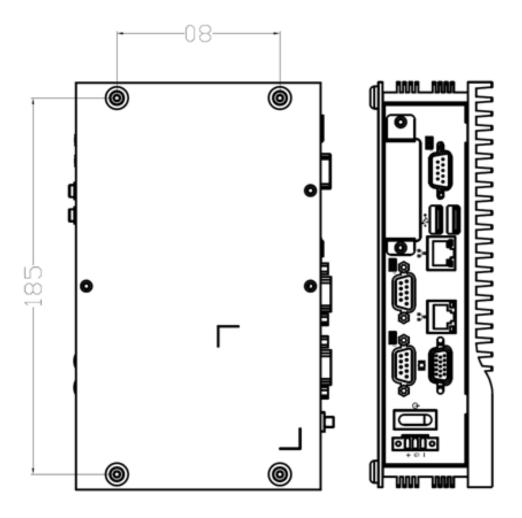
- Driver
  - Audio Driver
  - Chipset Driver
  - Ethernet Driver
  - Graphic Driver
  - AHCI Driver
- Manual
  - User Manual
  - Quick Manual



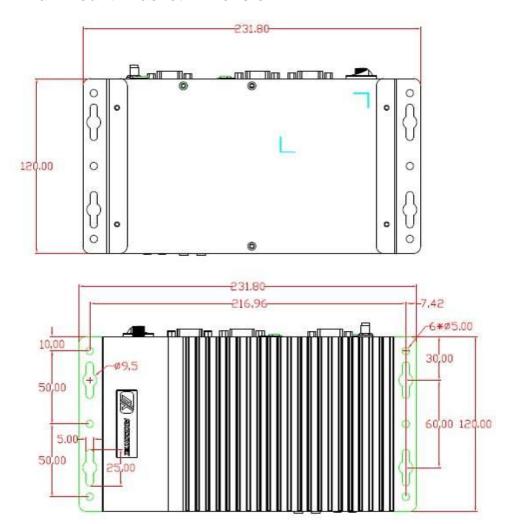
## 1.3 Dimensions

The following diagrams show you dimensions and outlines of the eBOX621-801-FL.

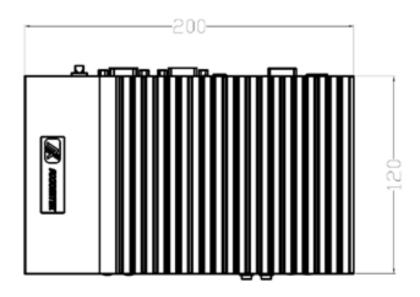
## 1.3.1 System Dimension

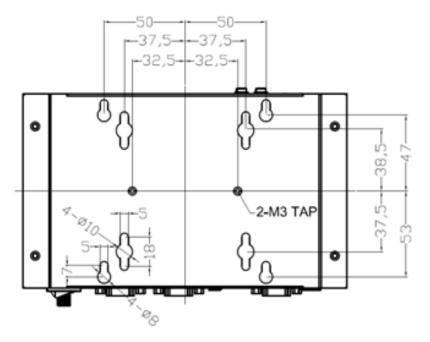


## 1.3.2 Wall mount Bracket Dimension



## 1.3.3 VESA Mount Bracket Dimension





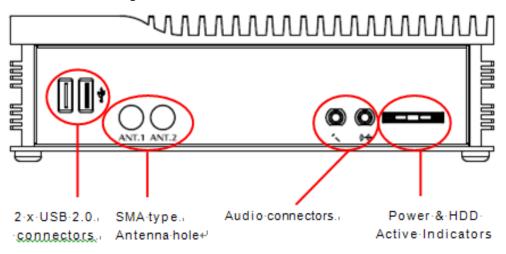
#### 1.4 I/O Outlets

The following figures show you I/O outlets on front view of the eBOX621-801-FL.

#### Front View



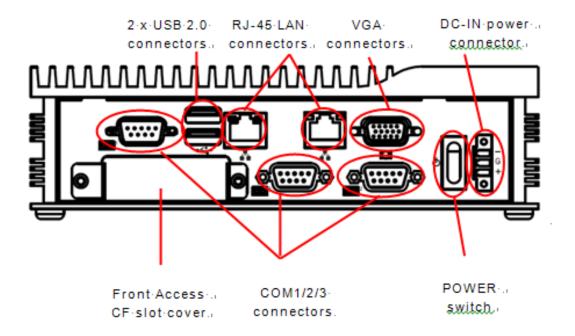
#### • Front View drawing



#### • Rear View



## • Rear View drawing



## 1.5 Packing List

The package bundled with your eBOX621-801-FL should contain the following items:

- eBOX621-801-FL System Unit x 1
- eBOX621-801-FL Quick Manual x 1
- CD x 1 (For Driver and User's Manual)
- Screws pack x1
- Foot pad x4
- Thermal Grease x1
- CompactFlash card Handhold Mylar x2
- DRAM Thermal pad x2(optional)
- Wall-mount Brackets (optional)
- VESA-mount Bracket (optional)
- Din-rail Bracket (optional)
- 2.5" SATA HDD (optional)
- CompactFlash<sup>™</sup> card (optional)
- DDR3 SODIMM (optional)
- 3 pin DCIN power connector

## 1.6 Model List

E36K621103 eBOX621-801-FL-D525- 1.8G-RC-US	Capa801 with Dual Core Atom D525 (1.8GHz), GbE LAN*2, COM*3, USB*4, 9-34V DC-in, CF & HDD support
---	---

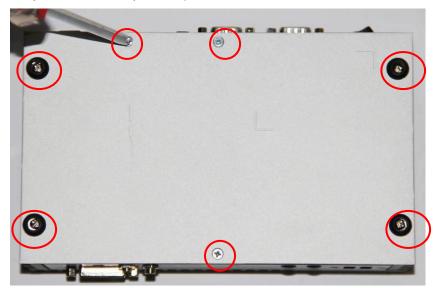
If you cannot find this package or any items are missing, please contact Axiomtek distributors immediately.

## CHAPTER 2 HARDWARE INSTALLATION

The eBOX621-801-FL is convenient for your various hardware configurations, such as Memory Module, HDD (Hard Disk Drive), SSD (Solid State Drive) and CompactFlash<sup>TM</sup> card. The chapter 2 will show you how to install the hardware.

#### 2.1 **Installing the Memory Module**

Step 1 Turn off the system, and unplug the power cord.Step 2 Turn the system upside down to locate screws at the bottom, loosen screws.



Step 3 Remove the bottom cover and Loosen screws of HDD bracket



Step 4 Remove the HDD bracket



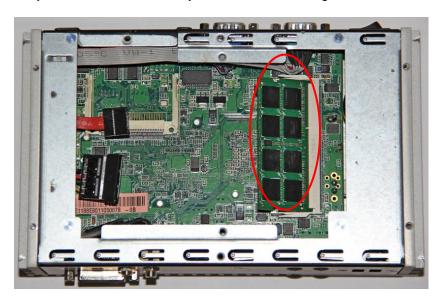
Step 5 Take out the thermal pad from accessory kit



**Step 6** Remove the transparent plastic Mylar from thermal pad, and stick the thermal pad onto motherboard.



Step 7 Locate the memory module, insert the gold colored contact into the socket.



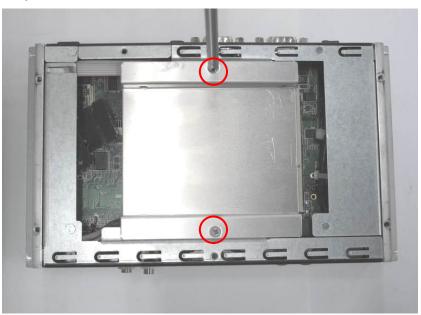
**Step 8** Push the module down, until it is firmly seated by locking two latches on the sides.



**Step 9** Take 2<sup>nd</sup> thermal pad, remove the transparent plastic mylar and stick it onto memory.



Step 10 Fasten screws of HDD bracket



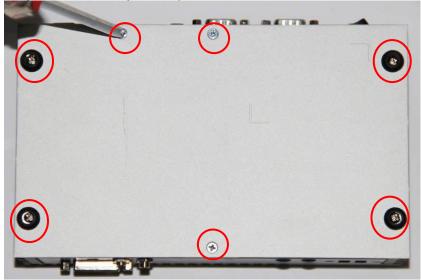
**Step 11** Close the cover to the chassis, and fasten all screws.



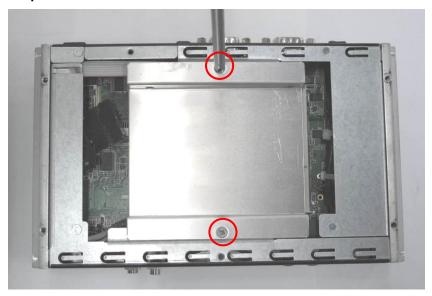
#### Installing the SATA HDD 2.2

Step 1

Turn off the system, and unplug the power cord.
Turn the system upside down to locate screws at the Bottom, loosen screws.



Step 3 Remove the bottom cover and Loosen screws of HDD bracket



Step 5 Remove the HDD bracket

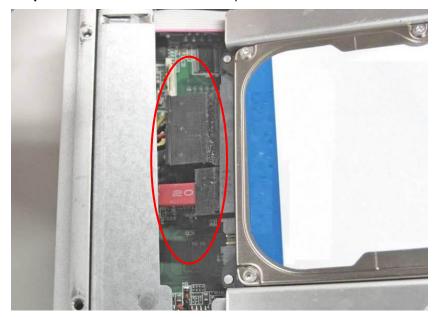


Step 6 Assembly the HDD bracket together with the SATA HDD





Step 7 Connect SATA cable and power cable to SATA HDD.



Step 8 Fasten screws of HDD bracket

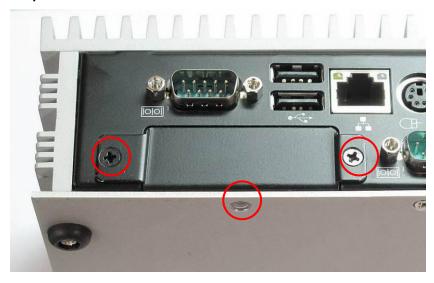


Step 9 Close the cover to the chassis, and fasten all screws.



## 2.3 Installing the CompactFlash

- **Step 1** Turn off the system, and unplug the power cord.
- Step 2 Turn the system upside down to locate screws at the Bottom, loosen screws.
- Step 3 Loosen screws to remove the CF cover.



Step 4 Stick the Mylar onto the Compact Flash card

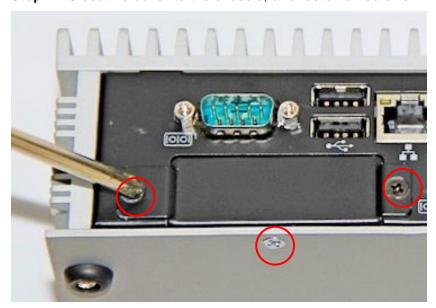


Step 5 Slide CF card into CF slot with caution.



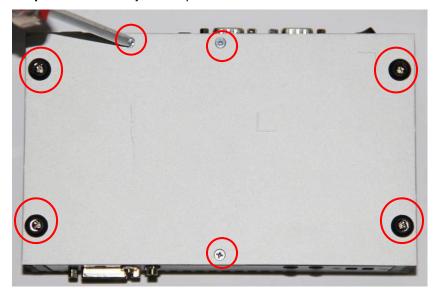
Step 6 Bend the CF Mylar with caution.

Step 7 Close the cover to the chassis, and fasten all screws.



## 2.4 Installing the Express Mini Card

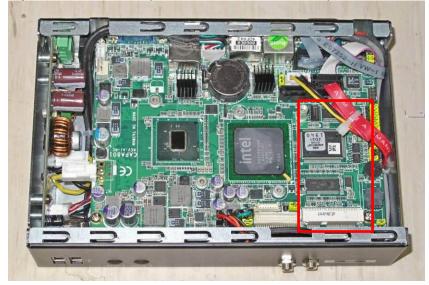
- Step 1 Turn off the system, and unplug the power cord.
- Step 2 Turn the system upside down to locate screws at the Bottom, loosen screws.



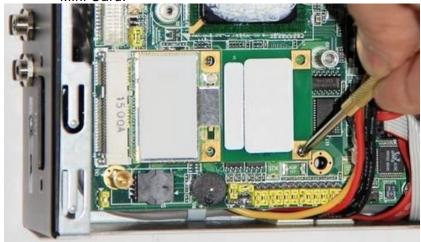
Step 3 Loosen screws at left side and right side. There are Total 8 screws.



Step 4 Remove the top heat sink to locate the Express Mini Card slot.



Step 5 Slide Mini card into Mini Card slot with caution and Fasten screw of Express Mini Card.



Step 6 Assembly the Top Cover back and fasten all screws.

## 2.5 Installing the Wall Mount (Optional)

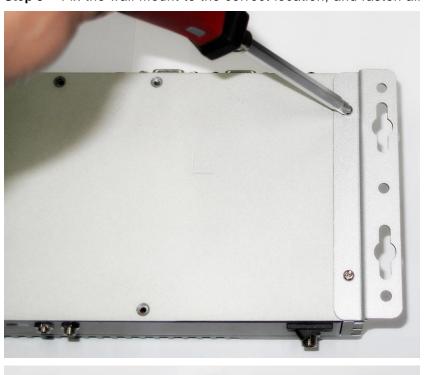
The eBOX621-801-FL provides Wall Mount that customers can install as below: **Step 1** Prepare Wall Mount assembling components (screws and Bracket) ready.



**Step 2** Loose the screw of four footpads at the bottom of eBOX621-801-FL and remove footpad.









# 2.6 Installing the VESA Mount (optional)

The eBOX621-801-FL provides VESA Mount that customers can install as below:

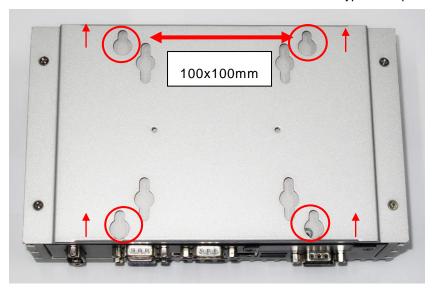
Step 1 Prepare VESA Mount assembling components (screws and VESA mount bracket) ready.



**Step 2** Loose the screw of four footpads at the bottom of eBOX621-801-FL, and emove footpad.

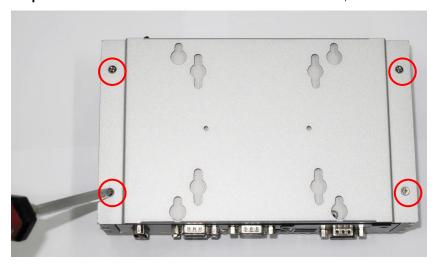


**Step 3** Decide correct mounting direction.eBOX621-801-FL supports both 100x100mm and 75x75mm VESA mount. The 100x100mm type has special direction.





Step 4 Fix the VESA mount to the correct location, and fasten all screws.



# 2.7 Installing the Din-Rail Mount (optional)

The eBOX621-801-FL provides Din-Rail Mount that customers can install as below:

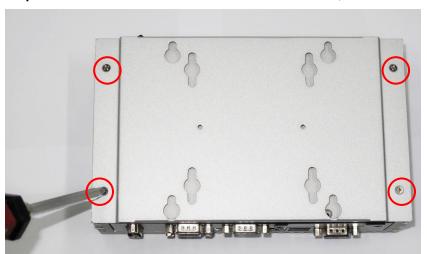
**Step 1** Prepare Din-Rail Mount assembling components (screws, Din-rail and VESA mount bracket) ready.



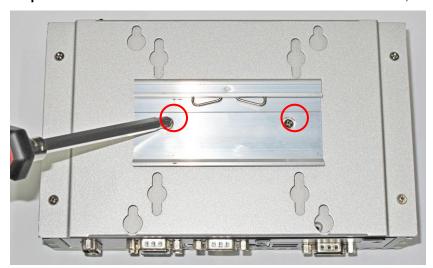
**Step 2** Loose the screw of four footpads at the bottom of eBOX621-801-FL and remove footpad.



**Step 3** Fix the VESA mount to the correct location, and fasten all screws.



Step 4 Fix the Din-rail mount bracket to the correct location, and fasten all screws.

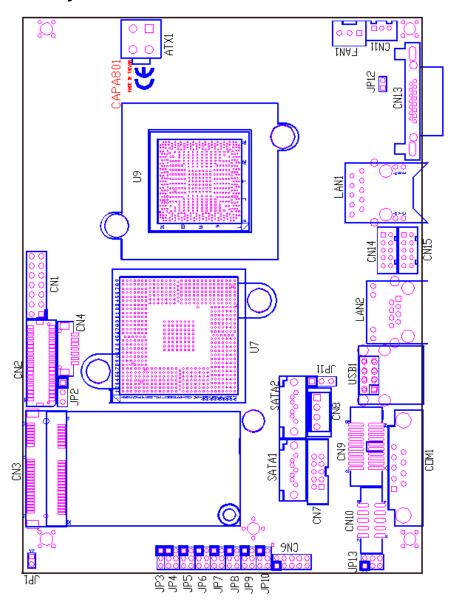


# MEMO:

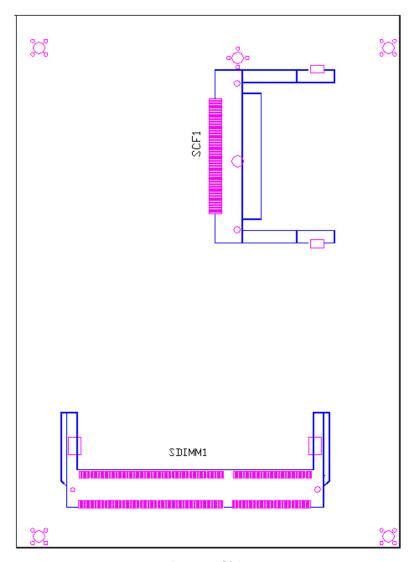
# CHAPTER 3 Jumper Setting & Connector

Proper jumper settings configure the **eBOX621-801-FL** to meet your application purpose. We are herewith listing a summary table of all jumpers and default settings for onboard devices, respectively.

# 3.1 SBC layout



**TOP Side** 



**Bottom Side** 

NOTE: We strongly recommended that you should not modify any unmentioned jumper setting without Axiomtek FAE's instruction. Any modification without instruction might cause system to become damage.

# 3.2 Jumper Setting Summary

Proper jumper settings configure the eBOX621-801-FL to meet your application purpose. We are herewith listing a summary table of all jumpers and default settings for onboard devices, respectively.

Jumper	Function / Default Setting	Jumper Setting
JP3	Compact Flash Voltage Selection Default: 3.3V	Short 1-2
JP4		Short 1-2
JP5	COM1 RS-232/422/485 Mode setting Default: RS-232	Short 3-5, 4-6
JP6		Short 3-5, 4-6
JP11	Normal Operation/Clear CMOS setting Default: Normal Operation	Short 1-2
JP13	Audio Speak Out/Line Out Selection Default: Line Out	Short 1-3, 2-4

# 3.2.1 CompactFlash™ Voltage Jumper (JP3)

The jumper is to select the voltage for CompactFlash™ interface. It is used to set CF connector (SCF1) PIN 13 (VCC) & PIN 38 (VCC), to be with voltage 3V or 5V.

Description	Function	Jumper Setting
Compact Flash Voltage Selection	+3.3V level (Default)	1 2 0 3 0
	+5V level	1

# 3.2.2 COM1 Mode Select Jumpers (JP4, JP5, JP6)

These jumpers select the communication mode of COM1 port to operate RS-232 or RS-422 or RS-485. When these jumpers are selected to operate RS-422 or RS485, please make sure the COM1 is on Data mode.

Description	Mode	Jumper Setting		
	RS-232 (Default)	JP4 1 □ □ 2 3 □ □ 4 5 □ □ 6	JP5 1	JP6 1
COM 1	RS-422	JP4 1	JP5 1	JP6 1
	RS-485	JP4 1	JP5 1	JP6 1

# 3.2.3 CMOS Clear Jumper (JP11)

You may need to use this jumper is to clear the CMOS memory if incorrect settings in the Setup Utility.

Description	Function	Jumper Setting
	Normal (Default)	1 2 3
CMOS Clear	Clear CMOS	1 2 3

# 3.2.4 Audio Output Jumper (JP13)

This jumper is to select which source for the audio output. When the Speaker Out is set, it delivers 2W/channel continuous into 8 Ohm loads.

Description	Function	Jumper Setting
	Line Out (Default)	2 4 6
Audio Output	Speaker Out	2 4 6

# 3.3 Connectors

Connectors connect the system with other parts/devices. Loose or improper connection might cause problems. Make sure all connectors are properly and firmly connected. Below summary table shows you all connectors on the eBOX621-801-FL.

External Connectors	Section
Phoenix DC-in Connector	3.3.1
Serial Port Connector	3.3.2
VGA Connector	3.3.3
LAN Connector(LAN1,LAN2)	3.3.4
USB Connector	3.3.5
ATX Power On/Off Button	3.3.6
Audio Connector	3.3.7
Internal Connectors	Section
SATA Connector	3.3.8
SATA Power Connector	3.3.9
CompactFlash™ Socket	3.3.10
DDR3 SO-DIMM	3.3.11
Express Mini Card Slot	3.3.12

# 3.3.1 Phoenix DC-in Connector

The system supports a wide range Phoenix DC-in connector for system power input.

Pin	Signal	П
1	+	
2	GND	G +
3	-	101

# 3.3.2 Serial Port Connector

The system has three serial ports. COM1 is RS-232/422/485 port, and COM2 are RS-232 port.

232 port.		
Pin	Description	
1	DCD, Data Carrier Detect	
2	RXD, Receive Data	COM1
3	TXD, Transmit Data	
4	DTR, Data Terminal Ready	<b>⊕</b> \00000
5	GND, Ground	@\çooo <i> </i> ®
6	DSR, Data Set Ready	
7	RTS, Request To Send	
8	CTS, Clear To Send	
9	RI, Ring Indicator	
Pin	Description	
1	DCD, Data Carrier Detect	7
2	RXD, Receive Data	COM2
3	TXD, Transmit Data	
4	DTR, Data Terminal Ready	
5	GND, Ground	
6	DSR, Data Set Ready	
7	RTS, Request To Send	
8	CTS, Clear To Send	
9	RI, Ring Indicator	
Pin	Description	
1	DCD, Data Carrier Detect	7
2	RXD, Receive Data	СОМЗ
3	TXD, Transmit Data	
4	DTR, Data Terminal Ready	
5	GND, Ground	<u> </u>
6	DSR, Data Set Ready	
7	RTS, Request To Send	
8	CTS, Clear To Send	
9	RI, Ring Indicator	

#### 3.3.3 VGA Connector

The VGA connector is a slim type 15-pin D-Sub connector which is common for the CRT VGA display. The VGA interface configuration can be configured via the software utility.

Pin	Signal	Pin	Signal	Pin	Signal
1	Red	2	Green	3	Blue
4	N.C.	5	GND	6	DETECT
7	GND	8	GND	9	VCC
10	GND	11	N.C.	12	DDC DATA
13	Horizontal Sync	14	Vertical Sync	15	DDC CLK
$\frac{5}{10}$					

# 3.3.4 LAN Connector (LAN1, LAN2)

The RJ-45 connector is for Ethernet. To connect the board to a 1000/100/10 Base-T hub, just plug one end of the cable into connector and connect the other end (phone jack) to a 1000/100/10-Base-T hub

Pin	Signal	Pin	Signal	A B
L1	MDI0+	L5	MDI2-	L8 L7L6 L5L4 L3 L2 L1
L2	MDI0-	L6	MDI1-	
L3	MDI1+	L7	MDI3+	A B
L4	MDI2+	L8	MDI3-	
Α	Active LED (Yellow)	FIVERINE		
В	100 LAN LED (Green)/ 10	000 LAN L	ED (Orange)	1111111

## 3.3.5 USB Connector

These ports can be routed to UHCI controller #1 or EHCI controller #1.

Pin	Signal USB Port 0	Pin	Signal USB Port 1	
1	USB VCC (+5V level)	5	USB VCC (+5V level)	5 6 7 8
2	USB #0_D-	6	USB #1_D-	
3	USB #0_D+	7	USB #1_D+	1 2 3 4
4	Ground (GND)	8	Ground (GND)	

# 3.3.6 ATX Power On/OFF Button

The ATX power button is on the I/O side. It can allow users to control eBOX621-801-FL power on/off.

Pin	Signal	کاک
1	GND	ф <b>[</b> ]
2	PSIN	10

# 3.3.7 Audio Connector

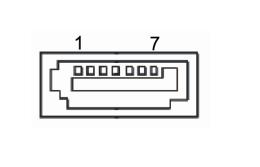
These two audio jacks ideal are for Audio Mic-In and Audio Line-out.

Pin	Signal	1 2
1	Microphone In	
2	Line Out	<b>*</b> **

### 3.3.8 SATA Connector

The SATA connector is for high-speed SATA interface ports and they can be connected to hard disk devices.

	Signal	Pin
	GND	1
1	SATA_TX+	2
7 00	SATA_TX-	3
Լ∖⊏	GND	4
	SATA_RX-	5
	SATA_RX+	6
	GND	7



# 3.3.9 SATA Power Connector

The SATA connector is for high-speed SATA interface ports and they can be connected to hard disk devices.

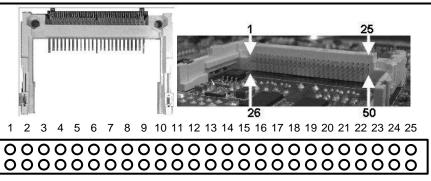
Pin	Signal	
1	+3.3VDC	
2	+3.3VDC	
3	+3.3VDC	│┗ <sub>┻</sub> ╸┃
4	СОМ	.
5	СОМ	╷┈┈┤╏╏╢
6	СОМ	
7	+5VDC	.   [6]
8	+5VDC	▎▐▐
9	+5VDC	
10	СОМ	.   [2]
11	СОМ	.   [€
12	СОМ	15 🖳
13	+12VDC	
14	+12VDC	•
15	+12VDC	

# 3.3.10 CompactFlash™ Socket

The system is equipped with a CompactFlash type-II socket with DMA mode to support an IDE interface CompactFlash disk. The socket is designed to avoid incorrect installation of the CompactFlash disk card. When installing or removing the CompactFlash disk card, please make sure the system power is off.

The CompactFlash disk card is defaulted as the C: or D: disk drive in your PC system. Pin13 and Pin 38 power voltage can be referred to JP3 Jumper Setting (See Section 3.2.1).

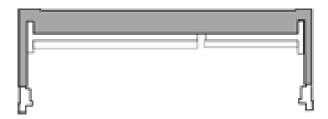
Pin	Signal	Pin	Signal
1	GND	26	CD1-
2	Data 3	27	Data 11
3	Data 4	28	Data 12
4	Data 5	29	Data 13
5	Data 6	30	Data 14
6	Data 7	31	Data 15
7	CS0#	32	CS1#
8	Address 10	33	VS1#
9	ATASEL	34	IORD#
10	Address 9	35	IOWR#
11	Address 8	36	WE#
12	Address 7	37	INTR
13	VCC	38	VCC
14	Address 6	39	CSEL#
15	Address 5	40	VS2#
16	Address 4	41	RESET#
17	Address 3	42	IORDY#
18	Address 2	43	DMAREQ
19	Address 1	44	DMAACK-
20	Address 0	45	DASP#
21	Data 0	46	PDIAG#
22	Data 1	47	Data 8
23	Data 2	48	Data 9
24	IOCS16#	49	Data 10
25	CD2#	50	GND



26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50

# 3.3.11 DDR3 SODIMM Socket

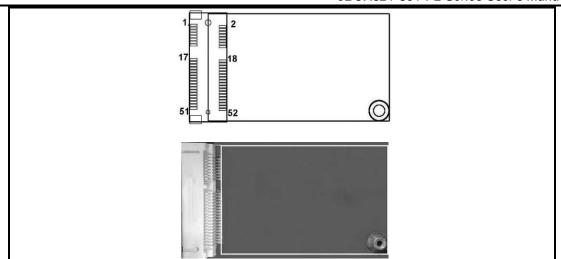
eBOX621-801-FL supports standard DDR3 204-pin 667/800 MHz SO-DIMM.



# 3.3.12 Express Mini Card Slot

PCI Express Mini Card connector supports a PCI Express x1 link and a USB 2.0 link. A PCI Express Mini Card can be applied to either PCI Express or USB 2.0. The USB 2.0 support will be helpful during the transition to PCI Express, because peripheral vendors will need time to design their chipsets to have the PCI Express function. During the transition, PCI Express Mini Cards can be quickly implemented by using USB 2.0.

Pin	Signal	Pin	Signal
1	WAKE#	2	+3.3VSB
3	No use	4	GND
5	No use	6	+1.5V
7	CLKREQ#	8	No use
9	GND	10	No use
11	REFCLK-	12	No use
13	REFCLK+	14	No use
15	GND	16	No use
17	No use	18	GND
19	No use	20	No use
21	GND	22	PERST#
23	PE_RXN3	24	+3.3VSB
25	PE_RXP3	26	GND
27	GND	28	+1.5V
29	GND	30	SMB_CLK
31	PE_TXN3	32	SMB_DATA
33	PE_TXP3	34	GND
35	GND	36	USB_D8-
37	GND	38	USB_D8+
39	+3.3VSB	40	GND
41	+3.3VSB	42	No use
43	GND	44	No use
45	No use	46	No use
47	No use	48	+1.5V
49	No use	50	GND
51	No use	52	+3.3VSB



# MEMO:

# CHAPTER 4 AMI BIOS SETUP UTILITY

This chapter provides users with detailed description how to set up basic system configuration through the AMI BIOS setup utility.

# 4.1 Starting

To enter the setup screens, follow the steps below:

- 1. Turn on the computer and press the <Del> key immediately.
- 2. After you press the <Delete> key, the main BIOS setup menu displays. You can access the other setup screens from the main BIOS setup menu, such as the Chipset and Power menus.

54

#### Navigation Keys 4.2

The BIOS setup/utility uses a key-based navigation system called hot keys. Most of the BIOS setup utility hot keys can be used at any time during the setup navigation process.

These keys include <F1>, <F10>, <Enter>, <ESC>, <Arrow> keys, and so on.

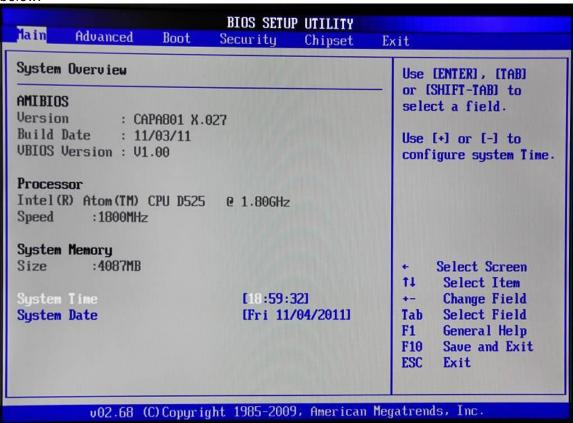


Note: Some of navigation keys differ from one screen to another.

← Left/Right	The Left and Right <arrow> keys allow you to select a setup screen.</arrow>	
↑ Up/Down The Up and Down <arrow> keys allow you to select a setup screen of screen.</arrow>		
+- Plus/Minus The Plus and Minus <arrow> keys allow you to change the field value particular setup item.</arrow>		
Tab	The <tab> key allows you to select setup fields.</tab>	
F1	The <f1> key allows you to display the General Help screen.</f1>	
F10	The <f10> key allows you to save any changes you have made and exit Setup. Press the <f10> key to save your changes.</f10></f10>	
Esc	The <esc> key allows you to discard any changes you have made and exit the Setup. Press the <esc> key to exit the setup without saving your changes.</esc></esc>	
Enter	The <enter> key allows you to display or change the setup option listed for a particular setup item. The <enter> key can also allow you to display the setup sub- screens.</enter></enter>	

## 4.3 Main Menu

When you first enter the Setup Utility, you will enter the Main setup screen. You can always return to the Main setup screen by selecting the Main tab. There are two Main Setup options. They are described in this section. The Main BIOS Setup screen is shown below.



#### System Time/Date

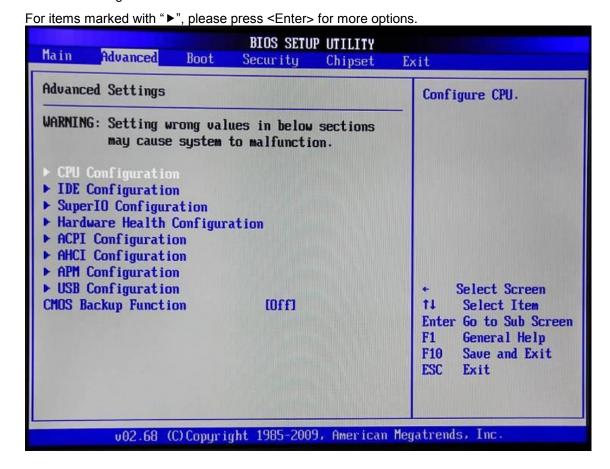
Use this option to change the system time and date. Highlight System Time or System Date using the <Arrow> keys. Enter new values through the keyboard. Press the <Tab> key or the <Arrow> keys to move between fields. The date must be entered in MM/DD/YY format. The time is entered in HH:MM:SS format.

56

# 4.4 Advanced Menu

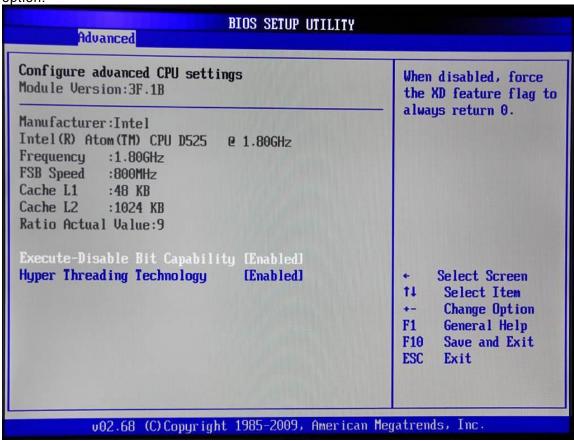
The Advanced menu allows users to set configuration of the CPU and other system devices. You can select any of the items in the left frame of the screen to go to the sub menus:

- CPU Configuration
- IDE Configuration
- Super IO Configuration
- Hardware Health Configuration
- ACPI Configuration
- APM Configuration
- MPS Configuration
- PCI Express Configuration
- USB Configuration



#### Configure advanced CPU settings

This screen shows the CPU Configuration, and you can change the value of the selected option.

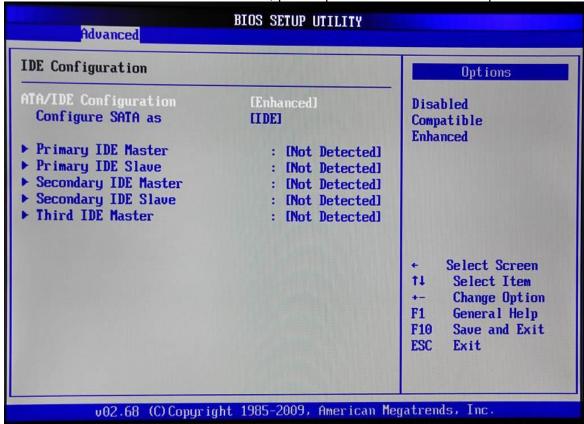


- Execute-Disable Bit Capability
  This item helps you enable or disable the No-Execution Page Protection Technology.
- Hyper Threading Technology Use this item to enable or disable Hyper-Threading Technology, which makes a single physical processor perform multi-tasking function as two logical ones.

58

#### • IDE Configuration

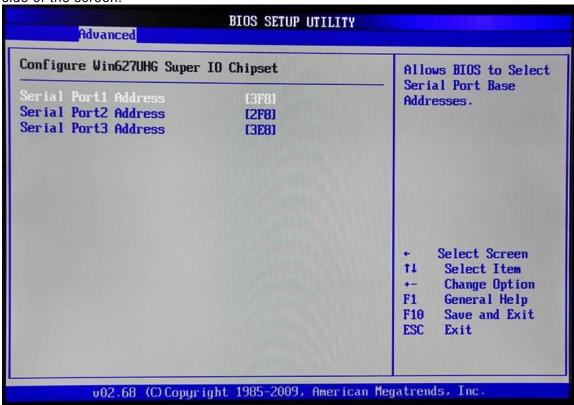
You can use this screen to select options for the IDE Configuration, and change the value of the selected option. A description of the selected item appears on the right side of the screen. For items marked with "▶", please press <Enter> for more options.



- ATA/IDE Configuration Use this item to specify the integrated IDE controller. There are two options for your selection: Disabled and Enhanced.
- Primary/Secondary/Third IDE Master Select one of the hard disk drives to configure IDE devices installed in the system by pressing <Enter> for more options.

#### Super IO Configuration

You can use this screen to select options for the Super IO Configuration, and change the value of the selected option. A description of the selected item appears on the right side of the screen.



#### Serial Port1 Address

This item specifies the base I/O port address and Interrupt Request address of serial port 1. The Optimal setting is 3F8.

#### Serial Port2 Address

This item specifies the base I/O port address and Interrupt Request address of serial port 2. The Optimal setting is 2F8.

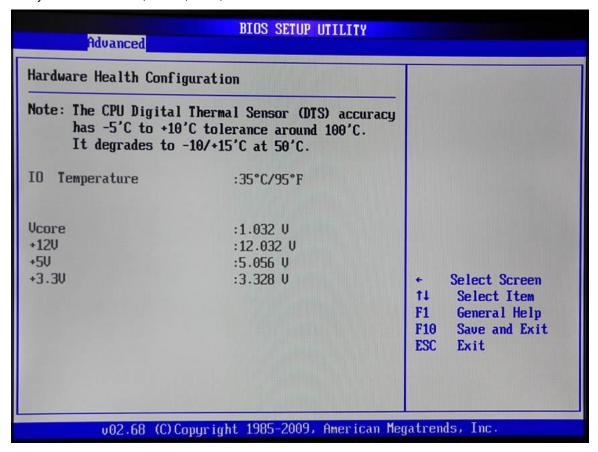
#### Serial Port3 Address

This item specifies the base I/O port address and Interrupt Request address of serial port 3. The Optimal setting is 3E8.

60

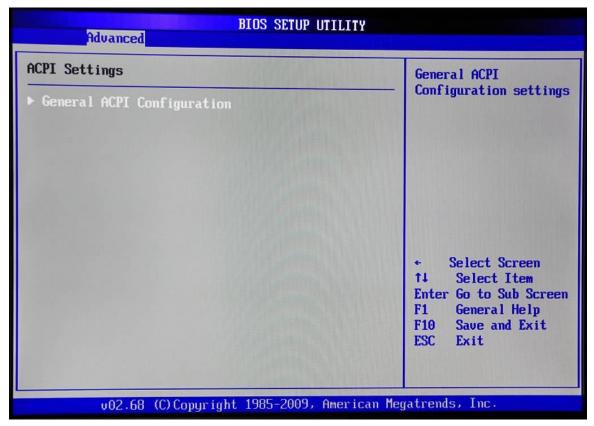
### Hardware Health Configuration

This screen shows the Hardware Health Configuration, which displays the temperature of System and Vlore, +12V, +5V, +3.3V.



#### ACPI Settings

You can use this screen to select options for the ACPI Settings, and change the value of the selected option.

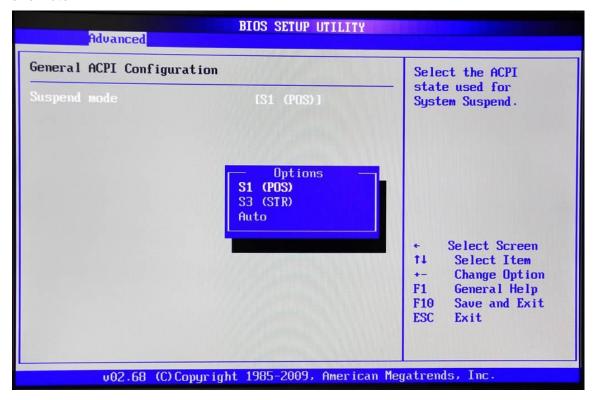


# General ACPI Configuration Scroll to this item and press <Enter> to view the General ACPI Configuration sub menu, which contains General ACPI (Advanced Configuration and Power Management Interface) options for your configuration.

62

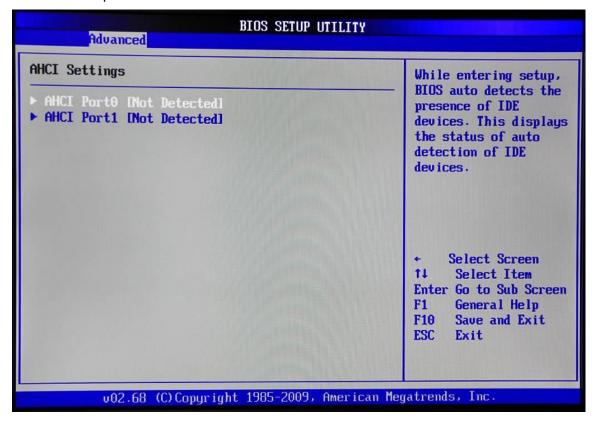
#### • Suspend mode

Allow you to select the Advanced Configuration and Power Interface (ACPI) state to be used for system suspend. Here are the options for your selection, S1 (POS), S3 (STR) and Auto.



# • AHCI Configuration

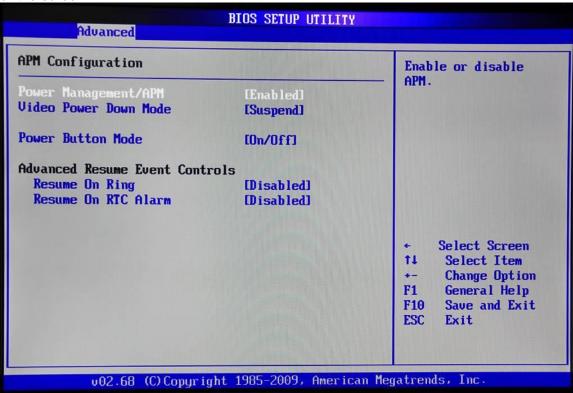
USE this screen to select options for the AHCI Configuration and change the value of the selected option.



64

## APM Configuration

You can use this screen to select options for the APM Configuration, and change the value of the selected option. A description of the selected item appears on the right side of the screen.



Power Management/APM
Set this item to allow Power Management/APM support. The default setting is Enabled.

Disabled	Set this item to prevent the chipset power management and APM (Advanced Power Management) features.
Enabled	Set this item to allow the chipset power management and APM (Advanced Power Management) features. This is the default setting.

#### > Video Power Down Mode

This option specifies the Power State that the video subsystem enters when the BIOS places it in a power saving state after the specified period of display inactivity has expired. The default setting is Suspend.

Disabled	This setting prevents the BIOS from initiating any power saving modes concerned with the video display or monitor.
Suspend	This option places the monitor into suspend mode after the specified period of display inactivity has expired. This means the monitor is not off. The screen will appear blacked out. The standards do not cite specific power ratings because they vary from monitor to monitor, but this setting use less power than Standby mode. This is the default setting.

## Power Button Mode

This option specifies how the externally mounted power button on the front of the computer chassis is used. The default setting is On/Off.

On/Off	Pushing the power button turns the computer on or off. This is the default setting. This is the default setting.	
Suspend	Pushing the power button places the computer in Suspend mode or Full On power mode.	

<sup>\*\*\*</sup> Advanced Resume Event Controls \*\*\*

## Resume On Ring

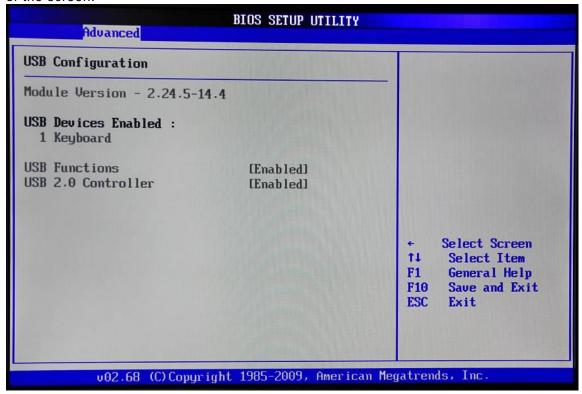
This item enables or disables the function of Resume On Ring that resumes the system through incoming calls.

## Resume On RTC Alarm

You can set "Resume On RTC Alarm" item to enabled and key in Data/time to power on system.

## USB Configuration

You can use this screen to select options for the USB Configuration, and change the value of the selected option. A description of the selected item appears on the right side of the screen.

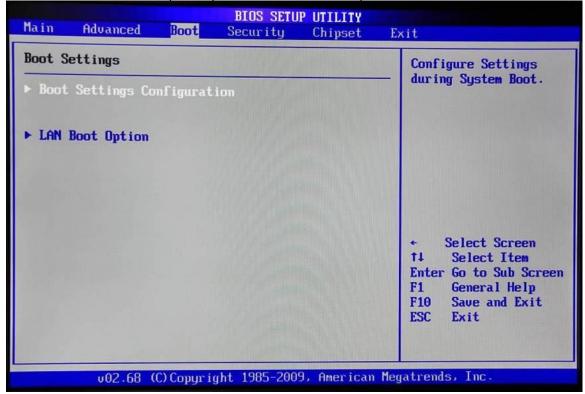


## 4.5 Boot Menu

The Boot menu allows users to change boot options of the system. You can select any of the items in the left frame of the screen to go to the sub menus:

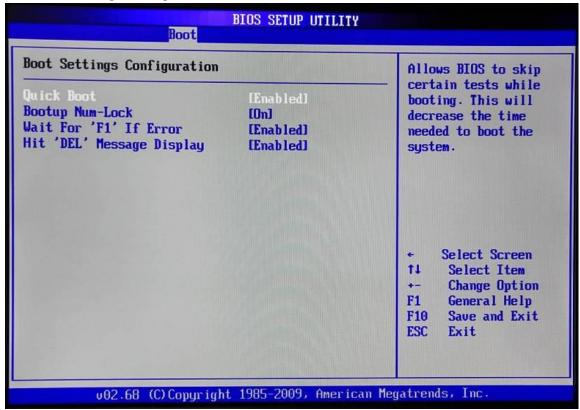
- Boot Settings Configuration
- LAN Boot Option

For items marked with "▶", please press <Enter> for more options.



68

## Boot Settings Configuration



## Quick Boot

Enabling this item lets the BIOS skip some power on self-tests (POST). The default setting is Enabled.

- ➤ Boot Num-Lock
  - Use this item to select the power-on state for the NumLock.. The default setting is On.
- Wait For 'F1' If Error

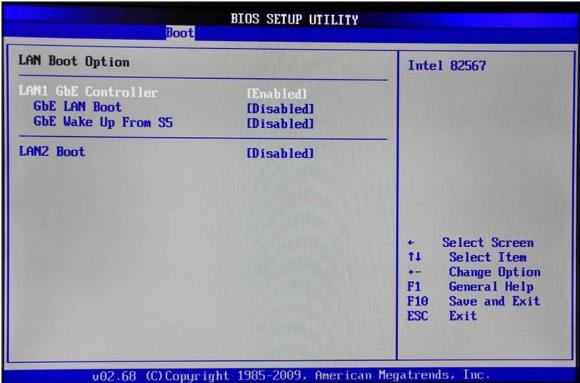
If this item is enabled, the system waits for the F1 key to be pressed when error occurs. The default setting is Enabled.

Hit 'DEL' Message Display

If this item is enabled, the system displays the message "Press DEL to run Setup" during POST. The default setting is Enabled.

## LAN Boot Option

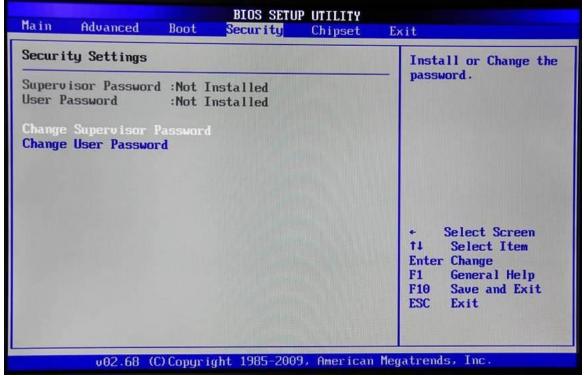
Use these items to enable or disable the Boot ROM function of the onboard LAN chip when the system boots up. Available options of the selected item appear on the right side of the screen



- LAN1 GbE Controller This item allows you to enabled or disabled Intel® LAN Controller.
- GbE LAN Boot Use these items to enable or disable the Boot ROM function of the onboard LAN chip when the system boots up
- GbE Wake Up From S5
  This item specifies whether the system will be awakened from the S5 power.
- LAN2 Boot Use these items to enable or disable the Boot ROM function of the onboard LAN chip when the system boots up.

## 4.6 Security Menu

The Security menu allows users to change the security settings for the system.



## Supervisor Password

This item indicates whether a supervisor password has been set. If the password has been installed, I Installed displays. If not, Not Installed displays.

## > User Password

This item indicates whether a user password has been set. If the password has been installed, <code>"Installed\_a displays."</code> If not, <code>"Not Installed\_a displays."</code>

#### Change Supervisor Password

Select this option and press <Enter> to access the sub menu. You can use the sub menu to change the supervisor password.

#### Change User Password

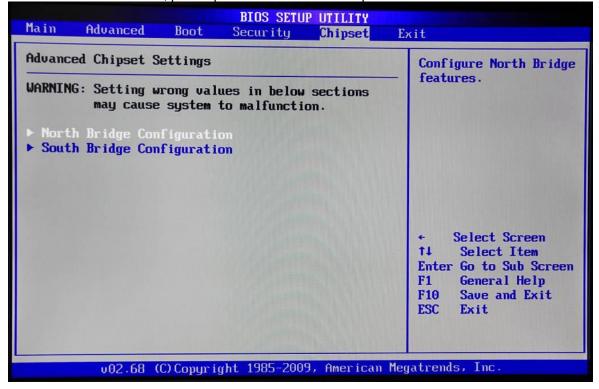
Select this option and press <Enter> to access the sub menu. You can use the sub menu to change the user password.

## 4.7 Chipset Menu

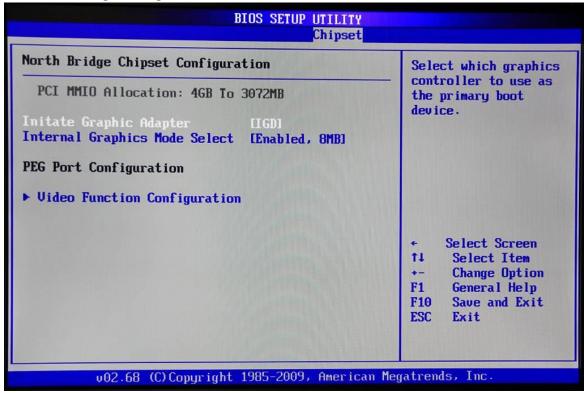
The Chipset menu allows users to change the advanced chipset settings. You can select any of the items in the left frame of the screen to go to the sub menus:

- North Bridge Configuration
- South Bridge Configuration

For items marked with "▶", please press <Enter> for more options.

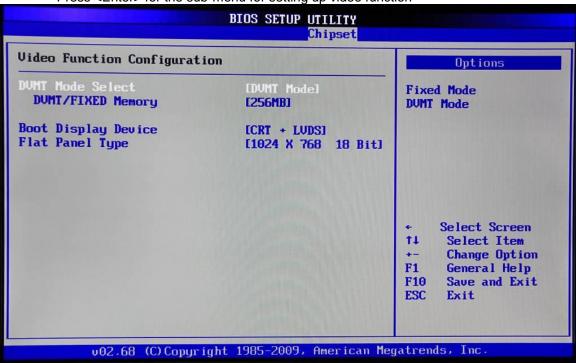


## North Bridge Configuration



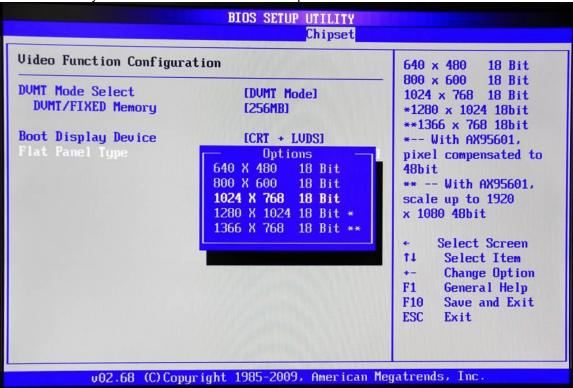
- Initiate Graphic Adapter When using multiple graphics cards, this item can select which graphics controller to be the primary display device during boot.
- Internal Graphics Mode Select This item allows you to select the amount of system memory used by the internal graphics device.

Video Function Configuration
 Press <Enter> for the sub-menu for setting up video function

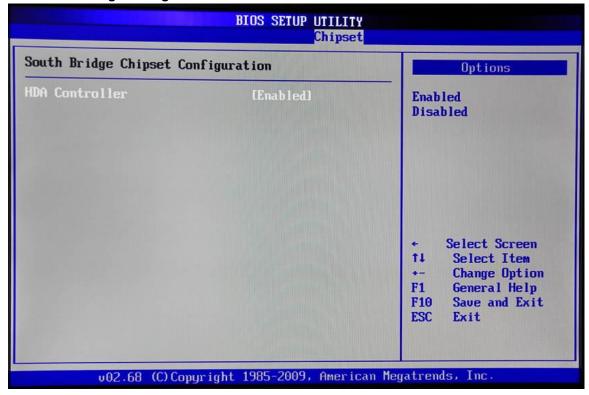


- DVMT Mode Select Allow you to select DVMT (Dynamic Video Memory Technology) mode and Fixed Mode.
- DVMT/FIXED Memory Allow you to allocate a fixed amount of system memory as graphics memory. Here are the options for your selection, 128MB, 256MB and Maximum DVMT
- Boot Display Device
   Allow you to modify the display device which will display when boot up.]

Flat Panel Type Allow you to choose the resolution of the panel.



## South Bridge Configuration

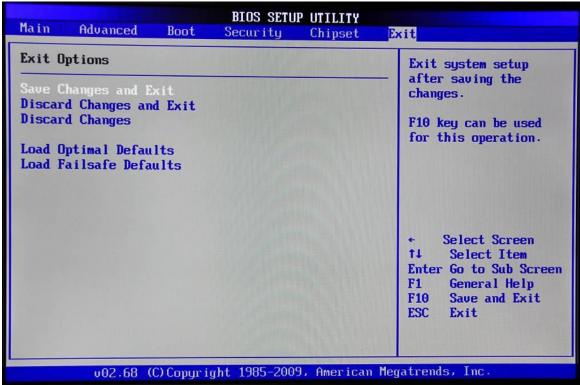


## > HDA Controller

This item allows you to enable or disabled the HD audio support.

## 4.8 Exit Menu

The Exit menu allows users to load your system configuration with optimal or failsafe default values.



#### Save Changes and Exit

When you have completed the system configuration changes, select this option to leave Setup and reboot the computer so the new system configuration parameters can take effect. Select Save Changes and Exit from the Exit menu and press <Enter>. Select Ok to save changes and exit.

## Discard Changes and Exit

Select this option to quit Setup without making any permanent changes to the system configuration. Select Discard Changes and Exit from the Exit menu and press <Enter>. Select Ok to discard changes and exit.

## Discard Changes

Use this item to abandon all changes.

#### Load Optimal Defaults

It automatically sets all Setup options to a complete set of default settings when you select this option. The Optimal settings are designed for maximum system performance, but may not work best for all computer applications. In particular, do not use the Optimal Setup options if your computer is experiencing system configuration problems. Select Load Optimal Defaults from the Exit menu and press <Enter>.

## > Load Fail-Safe Defaults

It automatically sets all Setup options to a complete set of default settings when you select this option. The Fail-Safe settings are designed for maximum system stability, but not maximum performance. Select the Fail-Safe Setup options if your computer is experiencing system configuration problems.

Select Load Fail-Safe Defaults from the Exit menu and press <Enter>. Select Ok to load Fail-Safe defaults

78

# APPENDIX A WATCHDOG TIMER

## ■ What is Watchdog Timer

After the system stops working for a while, it can be auto-reset by the Watchdog Timer. The integrated Watchdog Timer can be set up in the system reset mode by program. The integrated Watchdog Timer can be set up by programming. There are 1~255 levels available. As long as the value of timer is set, after enabling, the countdown of the value is starting. It needs to reset or disable watchdog, otherwise auto-reset will be running when the value is counted to 0

- Timeout Value Range
  - 1 to 255
  - Minute / Second

## ■ Timeout Value Range

## Assembler Sample Code

## ;Enable WDT:

Mov dx,2Eh

Mov al,87h ;Un-lock super I/O

out dx,al out dx,al

#### ;Select Logic device:

mov dx,2Eh

mov al,07h

out dx,al

mov dx,2Fh

mov al,08h

out dx,al

#### ;Activate WDT:

mov dx,2Eh

Mov al,30h

out dx,al

mov dx,2Fh

## eBOX621-801-FL Series User's Manual

mov	al,01h
out	dx,al

## ;Set Second or Minute:

Mov	dx,2Eh
Mov	al,0F5h
out	dx,al
mov	dx,2Fh

mov al,Nh ;N=00h or 08h(See below Note)

out dx,al

## ;Set base timer:

movdx,2Ehmoval,0F6houtdx,almovdx,2Fh

mov al,**M**h ;**M**=00h,01h,02h,.....FFh (Hex),Value=0 to 255

out dx,al ; (See below Note)

## ;Disable WDT:

mov dx,2Eh
mov al,30h
out dx,al
mov dx,2Fh

mov al,00h ;Can be disable at ant time

out dx,al

## Note:

## When N's value is 00h, the time base is set second.

**M** = 00: Time-out Disable

01: Time-out occurs after 1 second

02: Time-out occurs after 2 seconds

03: Time-out occurs after 3 seconds

.

FF: Time-out occurs after 255 seconds

## When N's value is 08h, the time base is set minute.

M = 00: Time-out Disable

01: Time-out occurs after 1 minute

02: Time-out occurs after 2 minutes

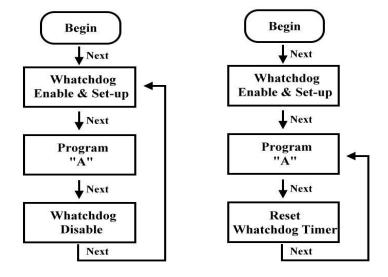
03: Time-out occurs after 3 minutes

.

FFh: Time-out occurs after 255 minutes

#### Sample of Watchdog application

Assume there is program A which needs to maintain running in a system. The value of Watchdog Timer must be set bigger than the running time of program A. Then, after the running time of program A is finished, either to disable or to reset watchdog timer. When program A has problems to make system shut down, the system can be rebooted by Watchdog timer when the value of watchdog timer is count downed to 0. The below flowchart can be referred to edit program



## MEMO: